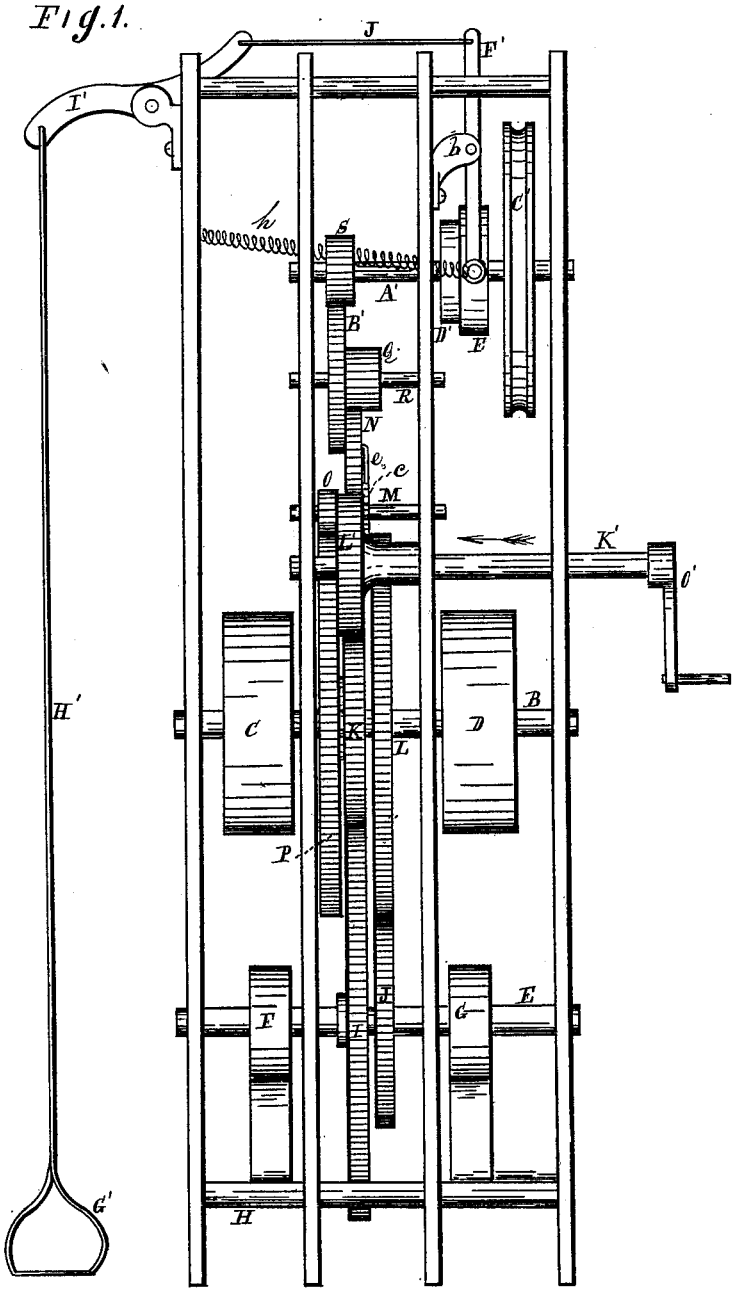
2 Sheets—Sheet 1.

I. E. MYRICK.

Motor for Sewing-Machines.

No. 201,040. Patented March 5, 1878.

Fig. 1.



Witnesses.

James Paton

W. F. Clarke.

Inventor.

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2 Sheets—Sheet 2.

I. E. MYRICK.

Motor for Sewing-Machines.

No. 201,040. Patented March 5, 1878.

Fig. 2.

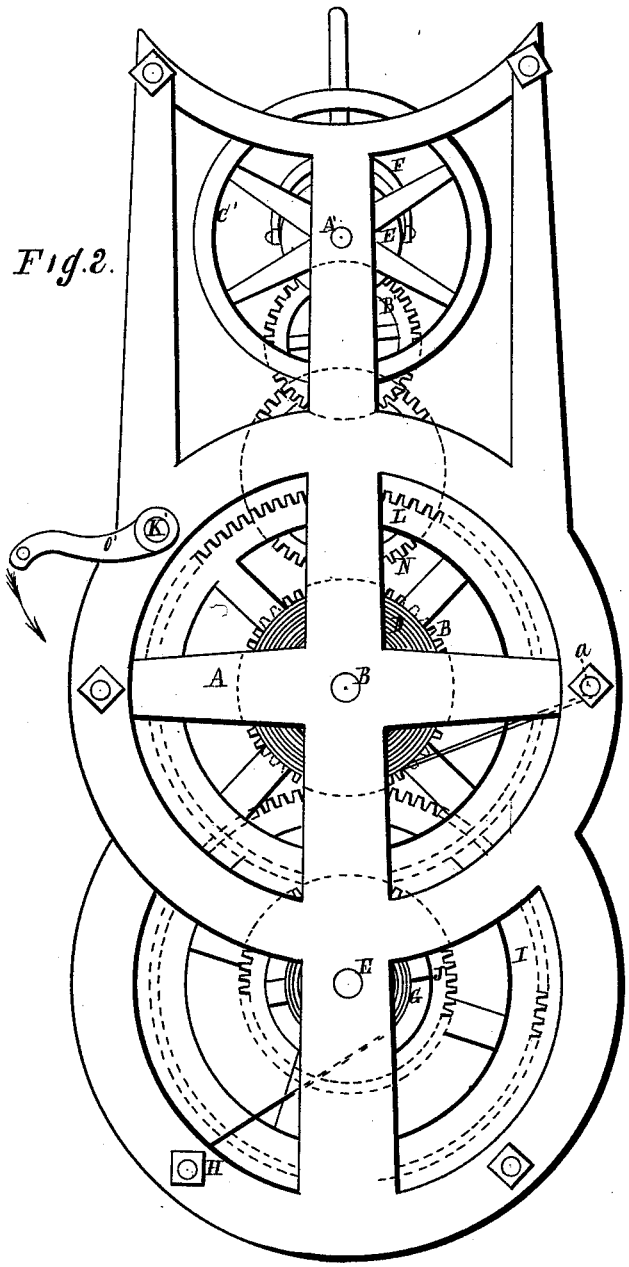


Fig. 3.

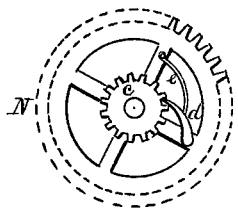
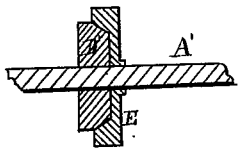


Fig. 4.



Witnesses.

James Paton
W. G. Clark

Inventor.

I. E. Myrick.
Per Burridge & Co.
Attys

UNITED STATES PATENT OFFICE.

ISRAEL E. MYRICK, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN F. HOLLINGSWORTH, OF SAME PLACE.

IMPROVEMENT IN MOTORS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **201,040**, dated March 5, 1878; application filed February 11, 1878.

To all whom it may concern:

Be it known that I, ISRAEL E. MYRICK, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Motor for Sewing-Machines, &c.; and I do hereby declare that the following is a full, clear, and complete description thereof, reference being had to the accompanying drawings, making a part of the same.

Figure 1 is a front view of the machine. Fig. 2 is a side view of the same. Figs. 3 and 4 are detached sections.

Like letters of reference refer to like parts in the several views.

The novelty of this invention consists of an arrangement of a pair of auxiliary springs and certain wheels adapted to co-operate with main springs and a system of gearing, whereby said system of gearing is re-enforced and its power increased, and the winding up of the mechanism rendered more readily effective than that of ordinary motors of this class.

The special purpose of the motor alluded to is for driving a sewing-machine, which, however, is equally suitable for running other light machines.

The drawing, Figure 1, represents a front view of the motor, of which A is the frame. B is a shaft, whereon is secured a pair of helical springs, C and D. The outer ends of said springs are made fast to a transverse bolt, *a*, Fig. 2, whereby the several sections of the frame are bolted together.

E, Fig. 1, is also a shaft, whereon is secured a pair of helical springs, F and G. The outer ends of said springs are attached to a transverse bolt, H, corresponding to the bolt *a*, to which the larger springs C D are attached, which also assist in bolting together the several sections of the frame.

On the shaft E referred to are keyed the cog-wheels I and J, Fig. 1, which are made to engage, respectively, the cog-wheels K and L on the shaft B. The wheel L is keyed to the shaft, whereas the wheel K is free to revolve thereon, together with the wheel P, to which said wheel K is bolted. On the shaft M is keyed a cog-wheel, N; also by the side of it is keyed a pinion, O. Said pinion engages the cog-wheel P, loose on the shaft B. The wheel N alluded to engages the pinion Q on the shaft R, whereby motion is transferred to the pinion S on the shaft A′ by means of the transfer-wheel B′. Said shaft A′ carries a band-wheel, C′, whereby power is communicated to a sewing-machine or to other light mechanism.

On said shaft A′ is a brake, consisting of a cone, D′, secured to the shaft, and fitting in a corresponding shell, E′, free to slide upon the shaft. To the shell are pivoted the arms of the bifurcated lever F′, pivoted at *b* to the frame, and whereby the shell is moved upon the shaft for engaging the cone and wheel C′. Said lever is actuated by the foot inserted in the stirrup G′, terminating the rod H′, depending from the lever I′, to which the bifurcated lever alluded to is connected by a rod, J′. A detached sectional view of the brake is shown in Fig. 4.

To the side of the wheel N, above referred to, is a ratchet or check wheel, *c*, of which *d* is the pawl, and *e* the spring, whereby the pawl is held in engagement with the wheel, as shown in Fig. 3. To the shaft K′, Fig. 1, is keyed a cog-wheel, L′, so adjusted as to engage the cog-wheel P on pushing the shaft in direction of the arrow. The purpose of said wheel will presently be shown.

Having described the construction of the motor, the practical operation of the same is as follows: The main power of the motor is in the springs C and D. The springs F and G being auxiliary, co-operating therewith for driving the gearing, there may be more or less number of springs. The motor is wound up by means of the wheel L′, actuated by the crank O′. To this end said wheel is made to engage the wheel P by pushing its shaft in direction of the arrow. Now, on turning the crank in direction of the arrow, Fig. 2, the springs are wound up thus: The wheel K, attached to the wheel P, both of which are loose on the shaft B, rotates the wheel I, which, in turn, revolves the shaft E, thereby winding up the springs F and G, and simultaneously therewith the springs C D, by the wheels J engaging the wheel L. The springs are retained wound by the pawl and ratchet-wheel above described. The resiliency of the springs

runs the gearing, the speed of which is regulated by the brake, which, as above said, is operated by the foot of the operator inserted in the stirrup upon pressing down thereon. The shell of the brake is forced against the side of the wheel C′. The friction thereby induced retards the speed of the motor more or less, according to the pressure of the shell upon the wheel. On removing the foot from the stirrup the shell is drawn back onto the cone by a spring or springs, *h*, with sufficient force to cause frictional resistance enough to stop the machine.

It will be observed that the power of the springs F and G is applied to the peripheries of the wheels K and L, thereby re-enforcing the springs C and D, by the leverage of the wheels to which the power of the auxiliary springs is applied. An increase of power is thereby obtained in the compound arrangement and movement of the wheels, and a more steady and uniform working of the mechanism obtained than could be without the re-enforcing auxiliary springs; also, the auxiliary springs distribute the power, so that the winding of the springs is made easier than if the power of the motor were confined to a less number of springs of equal power to the several; and, further, a less number of springs must, of necessity, be of great length and thickness, which would make it hard to wind them, and at the same time render them liable to break when subject to the strain of winding.

It will be seen that the wheels K and P on the shaft B, to which the driving-wheel L is keyed, make two revolutions to the one of wheel L and the wheels I and J. By this arrangement of the wheels more power is obtained to the motor than could be had without the auxiliary springs, the power of which is exerted upon the wheels I and J, as above said.

The tension of the lower springs continues longer than that of the upper ones; hence, when the upper ones become exhausted, the lower springs continue to exert their power upon the wheels, which will continue the movement of the motor for some considerable time when the main springs are exhausted.

I am aware that motors consisting of gearing and springs have been known but what I claim is an improvement in this class of motors, as herein described, the distinguishing features of which are set forth in the claims as follows:

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In motors of this class, an improvement consisting of two springs secured at their interior ends to the same shaft B, and having upon said shaft the gears P K L, one of which is keyed thereto, one loose thereon, and the other in gear with the pinion O, with the wheels K L in gear with the wheels I J, the latter secured to one shaft, and having thereon the springs F G, constructed and arranged to operate conjointly, substantially as and for the purpose set forth.

2. In motors, the combination of the gears P K, united together and loose upon the shaft B, with the gear L rigidly thereon, and having one or more volute springs connected with said shaft, and arranged in such relation to the gears I J and springs F G that the force of the springs C D is transmitted to the gear J by the gear L, and thence communicated to the gear K and its upper connections by the gear I co-operating with the action of the springs F G, substantially as and for the purpose specified.

ISRAEL E. MYRICK.

Witnesses:
W. H. BURRIDGE,
J. H. BURRIDGE.